

*Curriculum Vitae*  
**Linda R. Coney**  
April06JobFair

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**Education:**

2000: **Ph.D., Physics, University of Notre Dame**

Thesis: "Diffractive  $W$  and  $Z$  Boson Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1800$  GeV."

1997: **M.A., Physics, University of Notre Dame**

1993: **B.S., Physics and Mathematics (Magna Cum Laude), Hope College**

**Academic Positions:**

2005-2006: Fermilab Guest Scientist with Columbia University

2001-2005: Postdoctoral Research Associate, Columbia University

2000: Postdoctoral Research Associate, University of Notre Dame

1993-2000: Graduate Student, University of Notre Dame

1995-2000: Research Assistant

1994-1995: Teaching Assistant

1993-1994: Arthur J. Schmitt Presidential Fellow

1991-1993: Teaching Assistant, Hope College

1990-1993: Research Assistant, Atomic Physics Group, Hope College

**Awards:**

Arthur J. Schmitt Presidential Fellowship, University of Notre Dame, 1993-1994

Douwe B. Yntema Prize in Physics, Hope College, 1993

Senior Sigma Xi Award for Physics, Hope College, 1993

Phi Beta Kappa Honor Society, Hope College, 1993

**Professional Committees:**

2004-2005: APS Neutrino Study Booklet Committee

2002-2003: Organizing Committee, NuFact03 Workshop

2001: Young Physicist Forum Committee member, Snowmass 2001

2001-present: Young Particle Physicists (YPP) member

1997-1999: Fermilab Users' Executive Committee member

Chair of Quality of Life Subcommittee

Chair of Younger Physicists Issues Subcommittee

Outreach and Education Subcommittee member

Annual Users' Meeting Subcommittee member

## Research Experience:

- MiniBooNE Experiment (E898), member 2001-present: MiniBooNE is a neutrino experiment at Fermilab designed to look for oscillations from muon neutrinos to electron neutrinos. The Fermilab Booster provides an intense beam of protons onto a target producing pions which decay and result in a beam of muon neutrinos. These neutrinos are directed toward the MiniBooNE detector where a search for electron neutrinos is performed.
  - Participated in HARP experiment to measure pion production on MiniBooNE target and reduce systematic uncertainties on MiniBooNE neutrino flux.
  - Led Columbia University HARP group and guided tasking of graduate students.
  - Supervised data taking at HARP for MiniBooNE.
  - Tested and developed diagnostic system to monitor accelerator devices in Booster and identify instabilities.
  - Integrated new diagnostic system into permanent data logger to allow long term machine performance studies.
  - Participated in project to use ramped dipole correctors in Booster to control beam motion. Used new correctors to reduce beam losses near sensitive equipment.
  - Explored resonant extraction of beam halo as method to reduce uncontrolled beam loss.
  - Authored and edited technical documents using Latex, MS Powerpoint, MS Word, and Adobe Illustrator.
  - Experienced in UNIX, Microsoft Windows NT, VMS, Fortran and C++ programming, HTML, GEANT4, ICOOL, and data analysis languages (ROOT, PAW).
- HARP (Hadron Production Experiment at CERN - PS214) member 2001-present: HARP is a fixed target experiment at the CERN PS. This large acceptance spectrometer is used to systematically study hadron production for protons incident upon a large range of target nuclei. Specifically,  $\pi^+$  and  $\pi^-$  production cross sections are measured directly from the MiniBooNE target to reduce systematic uncertainties on the MiniBooNE neutrino flux.
  - Enabled measurement of cross section backgrounds by identifying need for empty target data for each HARP target.
  - Ensured high data quality by calculating appropriate beam settings and monitoring spectrometer detectors.
  - Led HARP Production Group which provided data and Monte Carlo samples to entire experiment for calibration and analysis purposes.
  - Contributed to measurement of  $\pi^+$  production cross section in p-Al collisions at 12.9 GeV/c which will be used to reduce systematic error in K2K neutrino flux.
  - Coordinated data management on three continents while maintaining data quality and consistency of production methods.
  - Developed system to enable remote-site HARP analysis at Fermilab, Los Alamos National Lab, and universities in Europe and Japan.
  - Created accurate material geometries for HARP GEANT4 simulation code.

- Analyzed, tuned, and validated simulations of HARP threshold Cerenkov detector.
- Developed particle momentum estimator to increase number of available tracks in cross section calculation.
- DØ Experiment, member 1995-2004: DØ is a collider experiment at the Fermilab Tevatron where studies are done on phenomena resulting from  $p\bar{p}$  collisions at a center of mass energy of nearly 2 TeV. The detector is geared primarily toward the investigation of large  $p_T$  phenomena. Top quark analyses, precision measurements of W and Z bosons, perturbative QCD testing, and new hard diffraction studies are all done at DØ .
  - Identified first diffractive Z boson production in  $p\bar{p}$  collisions.
  - Measured diffractive component of W and Z boson production in  $p\bar{p}$  collisions.
  - Developed extensive Monte Carlo (PYTHIA, POMPYT26) studies to investigate validity of pomeron exchange as driving mechanism for diffractive W and Z production.
  - Calculated diffractive dijet production rates predicted by pomeron models using PYTHIA and POMPYT26 for the hard single diffraction analysis.
  - Discovered miscalculation of reconstructed photon energies which degraded calibration of jet response.
  - Implemented photon energy scale correction which dramatically improved DØ jet response calculation.
  - Directed Central Fiber Tracker(CFT) fiber lightguide quality control project.
  - Developed testing procedure using X-ray source and scintillating fiber ribbons to measure production quality of lightguides fabricated for CFT.
  - Performed light attenuation and radiation damage studies on scintillating fibers.

### Teaching Experience:

- Supervised REU undergraduate students working on accelerator physics for MiniBooNE.
- Taught scientific method and research documentation techniques to high school teachers in the Quarknet and Fermilab TRAC (Teacher Research Associates) program.
- Lectured at engineering physics review sessions.
- Instructed introductory level physics labs for pre-med and engineering students.

### Communications and Administration:

- Organized and hosted NuFact03 conference at Columbia University.
- Addressed members of Congress, Presidential Budget Office representatives, and Department of Energy personnel to promote high energy physics research done Fermilab.
- Planned and ran 1998-1999 annual Fermilab Users' Meeting.
- Instituted and organized accelerator overview lecture series at Fermilab.

- Conceptualized and organized accelerator physics summer school at Fermilab.
- Arranged career planning workshop for Fermilab graduate students and post-docs.

### Conference and Workshop participation:

- 2005: Workshop on the Future of Nuclear Physics at LANSCE, Los Alamos
- 2004: Meeting of the Division of Particles and Fields: DPF 2004
- 2004: Neutrino 2004
- 2003: Neutrino Factory Workshop 2003: NuFACT 2003
- 2003: Particle Accelerator Conference (PAC): 2003
- 2002: Neutrino Factory Workshop 2002 : NuFACT 2002
- 2001: US Particle Accelerator School (USPAS) Winter 2002

### Conference Presentations and Seminars

- Meeting of the Division of Particles and Fields (DPF2004), Riverside, CA, August 2004: *HARP for MiniBooNE*
- Rutherford Appleton Laboratory, Particle Physics Seminar, Didcot, England, June 2004: *Status Report on the MiniBooNE Experiment*
- Fermi National Accelerator Laboratory, Summer Student Seminar, July 2003: *The HARP Experiment and MiniBooNE*
- Particle Accelerator Conference (PAC2003), Portland, OR, May 2003: *Fermilab Booster Orbit Correction*
- National Science Foundation, Accelerator Physics at Universities, Washington D.C., April 2003: *Columbia University Accelerator Physics*
- 4th International Workshop on Neutrino Factories based on Muon Storage Rings (NuFACT02), Imperial College, London, England, July 2002: *MiniBooNE Beam Systematics*
- Los Alamos National Laboratory, P-25 Seminar, April 2002: *Diffractionally Produced W and Z Bosons*
- Columbia University, Physics Graduate Student Seminar, New York, NY, March 2002: *Neutrino Factory: International Muon Ionization Cooling Experiment*
- APS/DPF/DPB Summer Study on the Future of Particle Physics (Snowmass 2001), Snowmass, CO, July 2001: *Young Particle Physicists (YPP) Outreach: Plans and Conclusions*
- XIth Rencontres de Blois - Frontiers of Matter, Chateau de Blois, France, June 1999: *Hard Diffraction at the Tevatron*

- APS Centennial Meeting, Atlanta, Georgia, March 1999: *Diffractional W Production at DØ*
- APS/AAPT Joint Meeting, Columbus, OH, April 1998: *Hard Diffraction at DØ*
- APS/AAPT Joint Meeting, Indianapolis, IN, May 1996: *The Hadronic Energy Scale of DØ Calorimetry*

## Outreach Activities

- 2005: Hosted second annual Fermilab Girl Scout Workshop. Led “Ask a Scientist” and explained lab scientific activities to over 100 grade school and high school scouts.
- 2005: Served as scientific advisor to “Science and Religion” class held at First Reformed Church of Holland, MI.
- 2005: Judged middle school science fair at Neuqua Valley High School in Naperville, IL.
- 2004: Participated in first Fermilab Girl Scout Workshop.
- 2004: Lectured Hope College physics and engineering majors visiting Fermilab on particle physics and accelerators at Fermilab.
- 2003: Led portions of Girls Scientific Salon at Fermilab which involves junior high school girls in hands-on physics experiments.
- 2002: Created and performed interactive demonstration program on Light and Color geared toward grade school students.
- 2001-2002: Developed National Science Foundation proposal with YPP to create and distribute particle physics instructional kits for primary school students.

## Publications in Refereed Journals (full publication list available):

- “Measurement of the production cross-section of positive pions in p - Al collisions at 12.9 GeV/c”, M. G. Catanesi *et al.* (HARP Collaboration), Nuclear Physics B **732**, (2006).
- “Observation of diffractively produced W and Z bosons in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV”, V. M. Abazov *et al.*, Phys. Lett. B **574**, 169 (2003); hep-ex/0308032, FERMILAB-PUB-03-233-E.
- “Hard Single Diffraction in  $p\bar{p}$  Collisions at  $\sqrt{s} = 630$  and 1800 GeV”, B. Abbott *et al.*, Phys. Lett. B **531**, 52 (2002); FERMILAB-Pub-99/373-E; hep-ex/9912061.
- “The ratio of jet cross sections at  $\sqrt{s}=630$  and 1800 GeV”, B. Abbott *et al.*, Phys. Rev. Lett. **86**, 2523 (2001); FERMILAB-Pub-00/213-E, hep-ex/0008072.
- “Extraction of the width of the W boson from measurements of  $\sigma(p\bar{p} \rightarrow W + X) \times \text{Br}(W \rightarrow e\nu)$  and  $\sigma(p\bar{p} \rightarrow Z + X) \times \text{Br}(Z \rightarrow ee)$  and their ratio”, B. Abbott *et al.*, Phys. Rev. D **61**, 072001 (2000); FERMILAB-Pub-99/171-E; hep-ex/9906025.
- “The Inclusive Jet Cross Section in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV”, B. Abbott *et al.*, Phys. Rev. Lett. **82**, 2451 (1999); FERMILAB-Pub-98/207-E; hep-ex/9807018.

- “Determination of the Absolute Jet Energy Scale in the DØ Calorimeters”, B. Abbott *et al.*, Nucl. Instrum. Methods Phys. Res. A **424**, 352 (1999); FERMILAB-Pub-97/330-E; hep-ex/9805009.
- “Probing hard color-singlet exchange in  $\bar{p}p$  collisions at  $\sqrt{s}=630$  GeV and 1800 GeV.”, B. Abbott *et al.*, Phys. Lett. B **440**, 189 (1998); FERMILAB-Pub-98/285-E; hep-ex/9809016.

### Non-Refereed Publications:

- “Fermilab Booster Orbit Correction.”, (L. Coney, J. Monroe, W. Pellico, and E. Prebys), in *Proceedings of the 2003 Particle Accelerator Conference* ed. J. Chew, P. Lucas, and S. Webber.
- “Young Physicists’ Forum.”, (T. Adams *et al.*), in *Proceedings of the APS/DPF/DPB Summer Study on the Future of Particle Physics (Snowmass 2001)* ed. R. Davidson and C. Quigg, eprint Archive: hep-ph/0110027.